

CLAIMS

1. An integrated circuit package separator method for separating integrated circuit packages from a board having a plurality of integrated circuits, comprising:

providing a base having a plurality of pins extending upwardly therefrom;

providing a support over the base, the support having a plurality of holes extending therethrough, the pins extending through the plurality of holes formed in the board and upwardly beyond an upper surface of the support;

configuring the support and the base such that the plurality of pins extend into the holes in the board when the board is placed over the upper surface of the support;

vertically displacing the support off the pins using a pair of pneumatic actuators such that individual actuators of the pair lift respective opposing ends of the support substantially simultaneously and in unison;

providing each actuator of the pair with release valves to equilibrate a back-pressure to ambient during lifting of the support; and

separating the integrated circuit packages from one another when the board is over the upper surface of the support.

2. The method of claim 1, further comprising aligning the pins and the board such that each of the separated integrated circuit packages is retained to the support by at least one pin, the vertically displacing including releasing the separated integrated circuit packages from the pins.

3. The method of claim 1, further comprising aligning the pins and the board such that each of the separated integrated circuit packages is retained to the support by at least two pins, the vertically displacing releasing the separated integrated circuit packages from the pins.

4. The method of claim 1, wherein the vertically displacing the support comprises forcing gas into the individual actuators.

5. The method of claim 1, wherein the lifting of the respective opposing ends of the support substantially simultaneously and in unison comprises forcing the gas into the individual actuators substantially simultaneously, and maintaining a substantially equal gas pressure at both actuators during the lifting.

6. The method of claim 5, wherein the maintaining a substantially equal gas pressure comprises equilibrating gas, through outlet lines of the individual actuators, with the ambient during the lifting.

7. The method of claim 1, wherein the vertically displacing comprises selectively flowing fluid from an external source into one or more ports of each actuator to selectively control displacement of the respective opposing ends of the support.

8. An integrated circuit package separator method for separating integrated circuit packages from a board having a plurality of integrated circuits, the method comprising:

providing a base having a plurality of pins;

providing a support over the base and having a plurality of holes extending therethrough, the plurality of pins extending through the plurality of holes;

vertically displacing the support off the pins using a pair of pneumatic actuators such that each of the pneumatic actuators lift respective opposing ends of the support substantially simultaneously and in unison;

providing each of the pneumatic actuators with release valves to equilibrate a back-pressure to ambient during lifting of the support; and

separating the integrated circuit packages from one another when the board is over the upper surface of the support.

9. The method of claim 8, further comprising aligning the pins and the board such that each of the separated integrated circuit packages is retained to the support by at least one pin, the vertically displacing including releasing the separated integrated circuit packages from the pins.

10. The method of claim 8, further comprising aligning the pins and the board such that each of the separated integrated circuit packages is retained to the support by at least two pins, the vertically displacing releasing the separated integrated circuit packages from the pins.